CASE STUDY: Sustainable Building

southwest precinct

seattle police department

INFORMATIONAL SUPPLEMENT FOR DCLU CUSTOMERS

The south-facing facade of the Seattle Police Department's Southwest Precinct features a canted wall and overhang to provide sun protection at the second floor, and exterior sunscreens above the first floor windows.

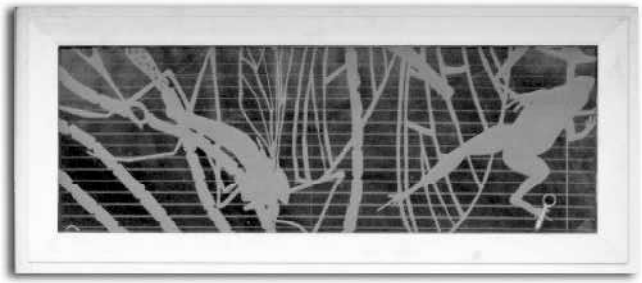
Photo by Ian Edelstein
City of Seattle Photgraphy

The April 2003 issue of dcluINFO *featured alternatives for stormwater management which recognize stormwater as a resource. This month's case study explores the City's newest green building, the Seattle Police Department's Southwest Precinct.*

Sustainable design was not part of the original scope of the Seattle Police Department's new Southwest Precinct. The schematic design phase was completed before the City's Sustainable Building policy was adopted in January of 2000, so the project did not fall under the policy. But under the leadership of the Seattle Police Department and the City's Fleets and Facilities Department, the project team explored whether they could still achieve a LEED™ Silver rating.

The team discovered that the project architect, Arai/Jackson Architects and Planners, had already made important design decisions that followed the principles of sustainable design. The building was designed to be responsive to the Northwest climate and allow daylight to illuminate the interior spaces. With a long and narrow footprint, Arai/Jackson had oriented the building to face south, which minimized glazing on the west-facing facade and maximized glazing on the southern facade, where it is much easier to control glare and heat gain.

> ***"Due to sustainable building strategies used in the Southwest Precinct, the building's operation and maintenance costs will be lowered by an estimated $83, 000 per year."***
>
> *—Teresa Rodriguez, Project Manager Seattle Fleets & Facilities Department*



CONNECTION TO NATURE: Operable windows are the number one amenity requested by building occupants. A series of operable fritted glass windows like the one pictured above were specially designed for the Southwest Precinct.

To help optimize the daylighting design and reduce glare and heat gain, Arai/Jackson engaged the Lighting Design Lab, who helped design an optimally sized canted exterior wall—which blocks direct sunlight and provides shade at the second story windows—and an exterior sunscreen above the first story windows. The overhangs and shading devices not only provide sun protection, but allow for high quality daylighting and a healthier, comfortable, and more productive work environment.

A different solution was required to control direct sun penetration on the west facade, as large expanses of glazing are located in a 900 square foot community meeting room and the building lobby. The design team partnered with the artist, Kay Kirkpatrick, to create an elegant solution—using fritted glass to filter the direct sunlight. The design combines a

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"Streambed Memories," a concrete and bronze structure inspired by the nearby Longfellow Creek Watershed, is one of a series of artworks by artist Kay Kirkpatrick featured at the Southwest Precinct. The work serves as a signpost and memory marker for officers lost in the line of duty.

Photo by Ian Edelstein
City of Seattle Photgraphy

Additional Resources

To learn more about the Seattle Police Department visit **www.cityofseattle.net/police.** Information on LEED™ is available at **www.usgbc.org**.

For project tips from the Lighting Design Lab, which provides free consultations, technical assistance and modeling services, visit **www.lightingdesignlab.com.**

To learn more about Seattle's Sustainable Building Program, visit their website at **www.cityofseattle.net/sustainablebuilding**. And to explore DCLU's role in sustainable building, visit **www.cityofseattle.net/dclu/sustainability** or contact:

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representation of the swirls and eddies of Longfellow Creek and text that communicates the police department's mission in languages of ethnic groups that have historically settled in the Delridge neighborhood.

The building form and orientation, daylighting and lighting design, and efficient HVAC system all work together to reduce the energy use in the building. Whole building simulation was used to predict energy performance, which will perform 28% better than ASHRAE 90.1-1999, reducing the annual energy costs by an estimated $10,800 per year.

The City has found that sustainable buildings will yield savings to Seattle citizens over time and are a sound investment decision. The Southwest Precinct experienced a cost increase of approximately 4% for sustainable building because it was not integrated into the project early in the planning and design process. However, the building's operation and maintenance costs will be lowered by an estimated $83,000 per year. After six years the initial investment will pay for itself, and the building will begin yielding savings from that time forward.

> ***"The City has found that sustainable buildings will yield savings to Seattle citizens over time and are a sound investment decision."***
>
> *—Tony Gale, City Architect*
> *Seattle Fleets & Facilities Department*

The Southwest Precinct will help inform the public about salmon-friendly and drought-tolerant landscapes, while strengthening awareness of and appreciation for native plants and local ecosystems. The project architect worked with the landscape architect, Hough Beck & Baird, to design the landscape with native plants and to provide a visible connection to Longfellow Creek and the Webster Street Detention Pond, located across the street. The pond improves drainage and creates habitat for native plants and animals by reducing the peak flows of stormwater into Longfellow Creek. It holds extra water during the rainy season to prevent flooding and erosion along the creek, or damage to fish, animal and plant habitat.

Stormwater runoff on the site—formerly a K-Mart parking lot—has been significantly reduced by replacing impervious asphalt with pervious surfaces, such as landscaping, on nearly 44% of the site. The project meets LEED criteria for stormwater management by complying with Seattle's Stormwater, Grading and Drainage Code. In addition, the stormwater that is detained prior to being discharged is treated with an organic filter system that removes total suspended solids and phosphorous, thereby helping to protect local water quality.

The project team demonstrated the use of green building materials and design for health and productivity, using Dakota Burl (a panel product made from sunflower seeds); wood certified by the Forest Stewardship Council as coming from sustainably, well-managed forests; recycled-content products, including flooring made from recycled tires and EPDM roofing materials; and ceramic tiles made from recycled glass.

A healthy working environment with good indoor air quality was achieved with an integrated approach: selection of low-emitting materials, effective ventilation and delivery of fresh air, and good construction management practices to protect building systems and components from contamination. Operable windows—the number one amenity requested by building occupants—are also featured to enhance comfort and health.